

# Phil. 401: Discussion Questions

January 31st, 2017

## Readings:

- Galileo. “Dialogue Concerning the Two Chief World Systems.” In M. Oster. *Science in Europe, 1500-1800: a primary sources reader*. Palgrave, 2002. Pages 77-82.
- Descartes. *Principles of Philosophy*. Part II. Articles 36-45. In R. Descartes. *The Philosophical Writings of Descartes*. Ed. by J. Cottingham, R. Stoothoff, and D. Murdoch. Vol. 1. Cambridge University Press, 1984. Vol. 1. Pages 240-244.

**Directions:** Compare your answers to reading assignment seven. Then answer the following questions. Many of the questions are open-ended and do not have a single, correct answer. Do your best. When you’ve finished the first section of questions, let me know, and we will discuss the answers as a class. If you finish the first set of questions before other groups, continue with the remaining questions.

## Idealization and Counterfactuals in Science

1. Galileo and Descartes both defend hypotheses (or laws) that describe how objects moves without interference. Why might such hypotheses useful if they describe circumstances that never actually arise? Here, it might help to think about idealized models (e.g., involving frictionless planes, point particles, perfectly rational agents, etc.) that you learned in science classes.
2. Like Galileo and Descartes, Aristotle likewise describes situations that never arise naturally. For instance, Aristotle argues that, if the concentric crystalline spheres of the universe did not cause each other to move, then the five elements would settle in their natural places in the universe. Compare and contrast the counterfactual situations that Aristotle imagines with those used by Galileo and Descartes.

## **Motion: Galileo, Descartes, and Aristotle**

1. Compare and contrast Descartes' laws of nature with Aristotle's theory of motion and natural place.
2. In Galileo's dialogues, Simplicio represents Aristotle. Simplicio ultimately agrees with Salvedo that a heavy stone dropped from a ship's mast will land next to the mast. Does Salvedo get Simplicio to abandon any principles of Aristotelian physics? Or does Salvedo argue, using principles that even Aristotle would accept, that the stone will land next to the mast?

## **Laws of Nature**

Descartes argues that conservation of momentum is a "law of nature." Why might Descartes have used the word "law?" To answer this question, consider the following questions as well.

1. Under what other circumstances do we use the word "law?"
2. How are "laws of nature" similar and different from other types of law?